CLAIMS

What is claimed is:

1. A composition comprising a salt of potassium, magnesium, and citrate having the general formula $K_xMg_y(C_6H_5O_7)_z$, wherein z is 2, and x is greater than or equal to 3.7 and less than 4.0 and y is greater than or equal to 1.0 and less than 1.15, and wherein electroneutrality is preserved by:

   adjusting x and y so that x+2y is equal to 6; or,

   including ions other than potassium, magnesium, or citrate.

2. The composition of claim 1 wherein said ions other than potassium, magnesium, or citrate are hydrogen ions.

3. The composition of claim 1 wherein x is greater than or equal to 3.8 and less than or equal to 3.95.

4. The composition of claim 1 wherein for the salt, the endothermic peak for decomposition from the modulated differential scanning calorimetry thermogram comprises:

   an onset temperature of greater than 320 °C;

   a peak minimum temperature of greater than 327 °C; and,

   a peak width of less than 9 °C.

5. A pharmaceutical composition useful as a magnesium and potassium dietary supplement, said composition comprising magnesium potassium citrate as a single salt, said salt having the general formula $K_xMg_y(C_6H_5O_7)_z$, wherein z is 2, and x is greater than or equal to 3.7 and less than 4.0 and y is greater than or equal to 1.0 and less than 1.15, and wherein electroneutrality is preserved by:

adjusting x and y so that x+2y is equal to 6; or,

including ions other than potassium, magnesium, or citrate.

6. The composition of claim 5 wherein said ions other than potassium, magnesium, or citrate are hydrogen ions.

7. The composition of claim 5 wherein said ratio of potassium ion to magnesium ion is less than or equal to 3.95:1 and greater than or equal to 3.8:1.

8. The composition of claim 5 wherein for the salt, the endothermic peak for decomposition from the modulated differential scanning calorimetry thermogram comprises:

an onset temperature of greater than 320 °C;

a peak minimum temperature of greater than 327 °C; and,

a peak width of less than 9 °C.

9. A method for producing a magnesium potassium citrate composition comprising the steps of:

mixing citric acid and water with uninterrupted agitation;

while still agitating, gradually adding a magnesium compound and a potassium compound thereto in such proportions that the mixture thus formed comprises potassium ions, magnesium ions, and citrate ions and has the general formula $K_xMg_y(C_6H_5O_7)_z$, wherein z is 2, and x is greater than or equal to 3.7 and less than 4.0 and y is greater than or equal to 1.0 and less than 1.15, and wherein electroneutrality is preserved by:

adjusting x and y so that x+2y is equal to 6; or,

including ions other than potassium, magnesium, or citrate;

blending the resultant composition; and thereafter,

drying and milling the resultant composition to form a magnesium potassium citrate composition.

10. The method of claim 9 wherein the water content of the reaction mixture is at least 120% by weight relative to theoretical dry yield of potassium magnesium citrate.

11. The method of claim 10 wherein said step of drying comprises spray drying.

12. The method of claim 11 further comprising the step of exposing the reaction mixture to heat, pressure, humidity, or any combination thereof.

13. The method of claim 9 wherein the water content of the reaction mixture is about 50% by weight relative to theoretical dry yield of potassium magnesium citrate.

14. The method of claim 9 wherein said magnesium compound is selected from the group consisting of magnesium carbonate, magnesium citrate, magnesium oxide, and magnesium hydroxide.

15. The method of claim 9 wherein said potassium compound is selected from the group consisting of potassium carbonate, potassium citrate, potassium bicarbonate, and potassium hydroxide.

16. The method of claim 9 wherein the composition has an endothermic peak for decomposition in its modulated differential scanning calorimetry thermogram, said peak comprising an onset temperature of greater than 320 °C; a peak minimum temperature of greater than 327 °C; and a peak width of less than 9 °C.

17. A method for supplementing dietary potassium and magnesium comprising administering to a person or animal, potassium magnesium citrate in a single salt consisting essentially of potassium, magnesium and citrate ions and has the general formula $K_xMg_y(C_6H_5O_7)_z$, wherein z is 2, and x is greater than or equal to 3.7 and less than 4.0 and y is greater than or equal to 1.0 and less than 1.15, and wherein electroneutrality is preserved by:

adjusting x and y so that x+2y is equal to 6; or,

including ions other than potassium, magnesium, or citrate.

18. The method of claim 17 wherein said step of administering comprises orally administering.

19. The method of claim 17 wherein said step of orally administering comprises orally administering tablets.

20. The method of claim 17 wherein said salt has an endothermic peak for decomposition in its modulated differential scanning calorimetry thermogram, said peak comprising an onset temperature of greater than 320 °C; a peak minimum temperature of greater than 327 °C; and a peak width of less than 9 °C.